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SCIENCE.—SUPPLEMENT.

FRIDAY, JUNE 18, 1886.

HOW TO TEACH GEOGRAPHY.

IF American teachers of geography and history could know and appreciate how those subjects are taught in the best schools, and in fact generally throughout Germany, Austria, and France, they would hardly be able to recognize the fact that large and interested classes were in those countries deriving keen intellectual enjoyment, and also acquiring sound and lasting knowledge from and of two subjects which in our primary and intermediate schools are, as a rule, matters of weary memorizing and mechanical drudgery. To teach is something that most of our teachers sadly need to be taught; and of geography this is perhaps unusually true. The usual method in this country is to compel a child of from seven to twelve years to first learn an abstract definition of geography; then follow some erudite sections as to the distribution of land and water on the globe, races of men, climate, and so forth, all stated in technical language that might well appal some older persons, to say nothing of child-minds, to whom the subject is new and utterly strange. After several pages of this material have been carefully stored away in the wholly unappreciative memory, a map is introduced, and the study of geography proceeds with the learning of the names of countries, rivers, mountain-chains, towns, and other unmanageable details, all of which are treated as if they had no connection whatever with one another. In a year or two geography is 'finished,' and the process of forgetting much of it begins. This barbarous, useless, and unscientific method of teaching (it may be so called by courtesy) geography is not confined to this country: it is the method usually followed in England also: and a paper on the subject, read by R. Elliot Steel, F.R.G.S., before the College of preceptors in London, and reported at some length in the *Educational times* for May, is quite as deserving of attention here as in England. Mr. Steel summarizes the abuses and deficiencies of the present system of teaching geography under the following heads: 1°. In maps, ignorance of scale, and failure in remembering the general outlines of a country and its principal physical features, in consequence of the use of maps crammed with details, and unsuitable for

teaching-purposes; 2°. More than any thing, ignorance of physical geography, including the simplest laws of the inorganic world; 3°. Total neglect of history; 4°. Ignorance of the commercial aspects of a country.

The fundamental cause of all these shortcomings is the fact that geography is not taught as a unity in any of the universities, and therefore the vast majority of the text-books are written by book-makers, and not by ardent students and teachers of the subject. Thus, the school-atlas is a clumsy, ill-constructed affair, generally designed to help adults find some obscure place or river, rather than to teach geography. The matter of scale is wholly overlooked; and the child sees no incongruity in asserting Spain to be as large as the United States, or Europe to equal Asia in size, for do not both occupy a full page of the book? This matter of scale is of primary importance, and cannot be taught abstractly. It is well to have the schoolroom supplied with a series of maps, all drawn to the same scale, say, 1: 10,000,000. But it is far better to teach the child experimentally. Let him measure the schoolroom in units (feet and inches) perfectly definite and well understood. Then let him draw a plan of the schoolroom on the blackboard, reduced to a scale, and then compare objects with this picture. Gradually the object delineated can be changed from the schoolhouse to the block, from the block to the village or city, from the city to the state; and so on. This will fairly fix in the beginner's mind the principles of map-drawing, and after that a map will cease to represent to him merely a page of the text-book.

At present we teach words and phrases, abstractions, instead of circumstances, natural laws, and material things. For example: what possible good can be derived from making a child learn from a book that a glacier is a river of ice, which descends the slopes of high mountains, till it finally melts in warmer regions or reaches the sea? Such knowledge as this would not even fit the pupil to read profitably so popular and untechnical a book as Tyndall's 'Hours of exercise in the Alps.' Should not instruction concerning glaciers rather be given somewhat as follows? to take some snow or pounded ice, to compress it into a hard, ice-like mass, to point out how, in a similar way, after a fall of snow, the upper layers compress by their weight the lower, and how ice thus becomes formed in the cavities and gulleys

of mountains above the snow-line; then to take a piece of ice, and, by means of a wire with weights attached, to show how the ice may be slowly cut, and how it will refreeze, and thus to illustrate the passage of the glacier along its bed; to show by illustrations, preferably photographs, the nature of the moraines, the final melting of the glacier, and the formation of the resulting river. In this way the pupil's knowledge of glaciers is real and permanent, and he is prepared to read of them, and of theories about them, with appreciative interest. And in the process some elementary facts of physics and mechanics, and the simpler laws of heat, have been learned.

Again: if a child draws a map himself, and locates, say, a hundred places on it, he will probably remember them all; while not ten per cent of them, if learned from an outline-map, would be retained. The influence of geography upon history is one of the most potent of facts to the trained scholar, and, although it admits of very elementary demonstration, it is almost invariably disregarded in teaching geography. Surely it could easily be taught that there is a connection between tropical climate and despotism, between temperate climate and freedom; that vast pastures have implied a feudal society of chiefs and dependents; that aristocracy is the natural constitution of a pastoral state; that the sea and the mountains have in many instances directed the current of civilization and of political development. Books like Huxley's 'Physiography,' Geikie's 'Elementary lessons in physical geography,' and Grove's 'Class-book of school geography,' should form part of the instruction of every pupil.

Finally, the connection between geography and various phases of political and commercial life should be pointed out. It should be shown why it is that various portions of a country have various pursuits, why manufacturing, mining, agriculture, the carrying trade, respectively, are carried on in certain sections and from certain centres. From this the transition is simple and evident to the lines of trade and commerce, — whence we receive our various imported goods and why, and what we export in exchange. Then, as a means of teaching concerning peoples and products, every school should contain a museum, that the pupils might see and handle the objects of which they have read and studied. In this way, and only in this way, can the study of geography be placed upon a scientific basis, and made the vehicle of practical knowledge instead of a task in committing dry details to memory. If our teachers are to do their part in this work, they must be shown how to do it, and trained to

do it. For this we must look, we hope not in vain, to our normal schools, training-classes, colleges, and universities.

THE OCCUPATIONS OF THE BRITISH PEOPLE.

THE London *Times* of May 21 has an interesting report of a paper read by Mr. Charles Booth before the Statistical society, on the occupations of the people of the United Kingdom, and on the changes that have occurred in the distribution of labor during the present century.

The *Times* says, "The inquiry is a difficult one, owing to the imperfections of the earlier returns, and the changes which have taken place in the mode of recording social phenomena. It was not until 1831 that any attempt at detailed classification of occupations was made, and even then it was of a limited and unsatisfactory kind. The next census showed some improvement; and at length, in 1851, the system was originated which still prevails, and under which the entire population is brought under enumeration and grouped into seventeen classes, with numerous sub-classes. But the system has suffered considerable modification from decade to decade since that date, and, in particular, large numbers have been transferred from one class to another; so that any thing like a trustworthy comparison of the details of successive decades becomes a matter of very great labor and difficulty. Mr. Booth has constructed tables in which these defects in the records are, as far as possible, remedied, and the figures for different periods reduced to common denominators. Some of the results will probably be found surprising by those who have not entered upon careful examination of their natural impressions."

Mr. Booth stated, that, as regarded England and Wales, between 1851 and 1881 the proportion of industrially employed women over fifteen, compared to the rest of the female population, had decreased continuously, but that the proportion of those otherwise employed — in domestic service, teaching, etc. — had increased in an equal degree year by year; so that the total employed one way or another remained practically constant. Having in a tabular form divided the whole population, taking the occupied and unoccupied together, he stated that all males over twenty were counted, for this purpose, with the occupied or self-supporting class, and the whole employed class might be divided as follows in the periods 1851, 1861, 1871, and 1881 respectively: all forms of industry (productive or distributive), 78.4, 77.2, 75.5, 74.2 per cent; public and professional service, 4.6, 5.3, 5.5, 5.6 per cent; domestic service, 13.3, 14.6, 15.8,